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induced as a regular thing in different oceanographic regions can not as yet be stated.

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- PEMBROKE,  
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A CASE OF ABNORMAL INHERITANCE IN  
*DROSOPHILA MELANOGASTER*

AMONG great numbers of cultures one is occasionally found which gives exceptional results not explainable by the usual mode of inheritance. Although such cases do not aid in understanding genetic problems unless the mechanism involved is worked out, the present case seems to be sufficiently remarkable to merit brief mention. The writer has no explanation to offer.

In culture 76, which was made up February 9, 1917, a large preponderance of males was observed, the ratio being 38 males to 3 females, and the males included unexpected classes. The parents of the culture were one homozygous eosin ruby forked female from stock and a male which was normal wild-type in all respects with the exception that the posterior cross veins of the wings were missing. His pedigree is unknown and he was

bred to determine whether the missing vein represented a genetic characteristic. This peculiarity probably had no relation to the exceptional nature of the offspring produced. The bottle was kept on the desk in the laboratory and the temperature was rather low most of the time, so that the larvæ developed slowly and the bottle became moldy before the flies finished hatching. It yielded exceedingly few flies, probably on this account as well as owing to the fact that nearly all the females were eliminated.

A count of the flies, as they hatched, gave 38 males and 3 females, a ratio which is inexplicable. The classes obtained were also as surprising. Owing to the cold the flies developed very slowly, so that the first offspring were removed on March 1 and comprised 18 eosin ruby forked sons. Four more hatched on the second and third, making a total of 22 eosin ruby forked sons which are of the expected class, since the three characteristics are sex-linked and the mother was homozygous for them. The count, continued until the thirteenth of March, gave a total of 3 normal females, which were expected in equal numbers with the males; 30 eosin ruby forked males; 2 eosin ruby males; 1 eosin male; 3 forked males; 2 normal or wild-type males.

The count in this case was kept up for more than the usual 10 days, but that could not have had any effect on the result in this case as no  $F_1$  females were found until March ninth and could not have produced offspring, even had the temperature not been so low as to lengthen the incubation period beyond 13 days. The exceptional males, which are the cross-over classes ordinarily obtained in the  $F_2$  generation from such a cross, could not be the result of a back-cross of the original mother to a son, as the only sons with which she could have come in contact were eosin ruby forked. In cases of primary non-disjunction, where sons inherit the sex-linked characters of the father, they inherit all his sex-linked characters, so that this can not be a case explainable by that means.

Contamination can hardly account for the results as the early males were of the expected class and later males always carried characters used in the cross, and the females were normal in appearance. Moreover, there is no known source of contamination that would give such a sex-ratio as this.

Results from the offspring were interesting but have not suggested any possible explanation of what occurred in the first generation. The eosin ruby forked sons were crossed out and

behaved quite normally in  $F_1$  and  $F_2$  generations. One forked son bred and gave offspring which behaved normally. The other two forked sons failed to produce any offspring, even though transferred to new bottles. The two eosin ruby sons were mated to bar females and afterwards rebottled with three females, but no offspring resulted. The eosin male also seemed to be sterile, as he was rebottled and remated without producing offspring.

The three daughters, which should have been heterozygous for eosin ruby and forked, and which have produced sons corresponding to that constitution, were crossed to brothers and gave the following unexpected results:

One in culture 88, mated to an eosin ruby forked brother, produced a total of 42 normal females, 74 forked females, 73 forked males, 37 normal males, and 13 eosin ruby forked males. A second in culture 93, mated to one of the wild-type brothers, produced 50 normal females and 28 forked females, 51 normal males and 73 forked males. The third daughter, mated to an eosin ruby forked brother, produced 2 normal, 35 forked, and 10 eosin ruby forked males; and 26 females all forked.

It is possible that the females were not virgin in these cases but that could not affect the sex-linked characters of the sons according to the normal mode of inheritance.

The two large classes of sons should have been the normal and eosin ruby forked classes, while the forked class of sons, which is the largest in all cases, should be no larger than the eosin ruby class, which does not occur even once.

Efforts to determine what was causing this abnormal inheritance were unsuccessful, because further breeding experiments showed the offspring of all classes to behave quite normally in all respects.

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